

Claims

What is claimed is:

1. An electronic structure, comprising:

a substrate;

a semiconductor device electrically coupled to the substrate;

a stiffener ring adhesively coupled to the substrate, wherein the stiffener ring surrounds the semiconductor; and

a cover plate on a top surface of the semiconductor and on a top surface of the stiffener ring, wherein the cover plate is adhesively coupled to a portion of the top surface of the semiconductor by a first adhesive, wherein the cover plate is adhesively coupled to a portion of a top surface of the stiffener ring by a second adhesive, and wherein a modulus of the first adhesive is less than a modulus of a second adhesive.

2. The electronic structure of claim 1, wherein the first adhesive has a modulus less than about 500 psi.

3. The electronic structure of claim 1, further comprising a heat sink, wherein the heat sink is coupled by a third adhesive to a portion of a top surface of the cover plate.

4. The electronic structure of claim 3, wherein a modulus of the third adhesive is less than the modulus of the second adhesive.

- 1 5. The electronic structure of claim 4, wherein the modulus of the third adhesive is about equal to
2 the modulus of the first adhesive.
- 1 6. The electronic structure of claim 4, wherein the modulus of the third adhesive is not equal to
2 the modulus of the first adhesive.
- 1 7. The electronic structure of claim 1, wherein the substrate has a compliance range of 10^4 psi to
2 3×10^6 psi.
- 1 8. The electronic structure of claim 1, wherein the semiconductor device includes a
2 semiconductor chip.
- 1 9. The electronic structure of claim 1, wherein the substrate is selected from the group consisting
2 of a chip carrier and a printed circuit board.
- 1 10. The electronic structure of claim 1, wherein the substrate comprises an organic material.

1 11. An electronic structure, comprising:

2 a substrate;

3 a semiconductor electrically coupled to the substrate; and

4 a cover plate on a top surface of the semiconductor, wherein the cover plate is adhesively
5 coupled to a portion of the top surface of the semiconductor by a first adhesive, and wherein the
6 first adhesive has a modulus less than about 500 psi.

1 12. A method for forming an electronic structure, comprising:
2 providing a semiconductor device;
3 electrically coupling the semiconductor device to a substrate;
4 adhesively coupling a stiffener ring to the substrate, wherein the stiffener ring surrounds
5 the semiconductor device, and
6 adhesively coupling a cover plate to a portion of a top surface of the semiconductor
7 device with a first adhesive and to a portion of a top surface of the stiffener ring with a second
8 adhesive, wherein a modulus of the first adhesive is less than a modulus of a second adhesive.

1 13. The method of claim 12, wherein the first adhesive has a modulus less than about 500 psi.

1 14. The method of claim 12, further comprising a heat sink, wherein the heat sink is coupled by a
2 third adhesive to a portion of a top surface of the cover plate.

1 15. The method of claim 14, wherein a modulus of the third adhesive is less than the modulus of
2 the second adhesive, wherein the third adhesive has a lower modulus than a second adhesive.

1 16. The method of claim 14, wherein the modulus of the third adhesive is about equal to the
2 modulus of the first adhesive.

- 1 17. The method of claim 12, wherein the substrate has a compliance range of 10^4 psi to 3×10^6 psi.
- 1 18. The method of claim 12, wherein the semiconductor device includes a semiconductor chip.
- 1 19. The method of claim 12, wherein the substrate is selected from a group consisting of a chip
2 carrier and a printed circuit board.
- 1 20. The method of claim 12, wherein the substrate comprises an organic material.